Present State of the Claims

The present state of the claims is shown below for the Examiner's convenience.

1. (Previously Presented) A method comprising:

starting execution of a basic input output system (BIOS), the BIOS including a plurality of firmware modules;

determining firmware resources required by each of the plurality of firmware modules to operate, the firmware resources required, if any, for a given firmware module provided by one or more other firmware modules;

scheduling modules of the plurality of firmware modules for execution in consideration of the required firmware resources that are determined; and

dispatching the scheduled modules for execution.

2. (Previously Presented) The method of claim 1, wherein the plurality of firmware modules are dispatched and executed in a pre-memory execution environment prior to availability of system memory for a platform on which the BIOS is installed.

3. (Previously Presented) The method of claim 1, further comprising calling a second module of the plurality of firmware modules for execution during execution of a first module of the plurality of firmware modules, the second module being called by a corresponding call instruction in the first module.

4. (Previously Presented) The method of claim 3, wherein calling a module of the plurality of firmware modules further comprises:

saving a return address;

determining a physical address of the module;

executing an instruction stored at the physical address of the module; and

executing an instruction stored at the saved return address when the module execution is complete.

5. (Previously Presented) The method of claim 4, wherein determining the physical address of the second module comprises looking up the physical address in an import table of the first module.

6. (Previously Presented) The method of claim 1, wherein a module of the plurality of firmware modules comprises:

a globally unique identifier (GUID) to identify the module;

a resource list to store information identifying firmware resources needed by the module to operate;

an import table to store physical addresses of a set of modules of the plurality of firmware modules that the module may call during execution;

a service that when executed performs a predetermined function;

an export table to store a value corresponding to a physical address of the service; and

an interface operatively coupled to the GUID, resource list, the service, the import table, and the export table, wherein the interface is addressable by a calling agent via the GUID to provide the calling agent access to the resource list, the service, the import table, and the export table.

7. (Original) The method of claim 6, wherein the value stored by the export table is an offset from a start address of the module.

8. (Previously Presented) The method of claim 6, wherein the import table stores GUIDs of the set of modules of the plurality of firmware modules.

9. (Previously Presented) The method of claim 1, further comprising:

starting execution of a first module of the plurality of firmware modules;

determining whether the first module is chainable with another module of the plurality of firmware modules;

determining whether a hardware component associated with the first module is present in the platform if the first module is chainable;

completing execution of the first module if the hardware component associated with the first module is present in the platform; and

starting execution of a second module of the plurality of firmware modules without completing execution of the first module if the hardware component associated with the first module is not present in the platform.

10. (Original) The method of claim 9, wherein the first module includes a data structure to store a physical address of the second module.

11. (Previously Presented) The method of claim 9, further comprising:

determining whether a hardware component associated with the second module of the plurality of firmware modules is present in the platform if the first module is chainable;

completing execution of the second module if the hardware component associated with the second module is present in the platform;

determining whether a third module is chained to the second module if the hardware component associated with the second module is not present in the platform; and

executing the third module of the plurality of firmware modules without completing execution of the second module if third module is chained to the second module.

12. (Original) The method of claim 11, wherein completing execution of the second module further comprises returning to a calling agent that called the first module.

13. (Previously Presented) The method of claim 1, further comprising:

executing a call made by a calling agent to a first module of the plurality of firmware modules, wherein the call is one of a set of calls, each call of the set of calls being associated with a module of a set of modules of the plurality of firmware modules, the associations being dependent on a configuration of the platform;

starting execution of the first module of the plurality of firmware modules in response to the call;

determining which module of the set of modules is associated with the call; and

starting execution of the module associated with the call.

14. (Original) The method of claim 13, further comprising returning to the calling agent when execution of the module associated with the call is complete.

15. (Previously Presented) A machine readable medium containing instructions that when executed by a machine, cause the machine to perform operations comprising:

starting execution of a basic input output system (BIOS), the BIOS including a plurality of firmware modules;

determining firmware resources required by each of the plurality of firmware modules to operate, the firmware resources required, if any, for a given firmware module provided by one or more other firmware modules;

scheduling modules of the plurality of firmware modules for execution in consideration of the required firmware resources that are determined; and

dispatching the scheduled modules for execution.

16. (Previously Presented) The machine readable medium of claim 15, wherein the machine comprises a platform including a processor on which the instructions are executed and system memory, further comprising instructions that when executed by the machine cause the machine to perform an operation of initializing the system memory of the platform after the scheduled modules are dispatched.

17. (Previously Presented) The machine readable medium of claim 15, further comprising instructions that when executed by the machine cause the machine to perform an operation of calling a module of the plurality of firmware modules for execution during execution of another module of the plurality of firmware modules.

18. (Previously Presented) The machine readable medium of claim 17, wherein calling a module of the plurality of firmware modules further comprises instructions that when executed by the machine cause the machine to perform operations comprising:

saving a return address;

determining a physical address of the module;

executing an instruction stored at the physical address of the module; and

executing an instruction stored at the saved return address when the module execution is complete.

19. (Previously Presented) The machine readable medium of claim 15, wherein a module of the plurality of firmware modules comprises:

a globally unique identifier (GUID) to identify the module;

a resource list to store information identifying resources needed by the module to operate;

an import table to store physical addresses of a set of modules of the plurality of firmware modules that the module may call during execution;

a service that when executed performs a predetermined function;

an export table to store a value corresponding to a physical address of the service; and

an interface operatively coupled to the GUID, resource list, the service, the import table, and the export table, wherein the interface is addressable by a calling agent via the GUID to provide the calling agent access to the resource list, the service, the import table, and the export table.

20. (Previously Presented) The machine readable medium of claim 15, further comprising instructions that when executed by the machine cause the machine to perform operations comprising

starting execution of a first module of the plurality of firmware modules;

determining whether the first module is a chainable with another module of the plurality of firmware modules;

determining whether a hardware component associated with the first module is present in the machine if the first module is chainable;

completing execution of the first module if the hardware component associated with the first module is present in the machine; and

starting execution of a second module of the plurality of firmware modules without completing execution of the first module if the hardware component associated with the first module is not present in the machine.

21. (Previously Presented) The machine readable medium of claim 20, further comprising instructions that when executed by the machine cause the machine to perform operations comprising:

determining whether a hardware component associated with the second module of the plurality of firmware modules is present in the machine if the first module is chainable;

completing execution of the second module if the hardware component associated with the second module is present in the machine;

determining whether a third module is chained to the second module if the hardware component associated with the second module is not present in the machine; and

executing the third module of the plurality of firmware modules without completing execution of the second module if third module is chained to the second module.

22. (Original) The machine readable medium of claim 21, wherein completing execution of the second module further comprising instructions that when executed by the machine cause the machine to perform an operation of returning to a calling agent that called the first module.

23. (Previously Presented) The machine readable medium of claim 15, further comprising instructions that when executed by the machine cause the machine to perform operations comprising:

executing a call made by a calling agent to a first module of the plurality of firmware modules, wherein the call is one of a set of calls, each call of the set of calls being associated with a module of a set of modules of the plurality of firmware modules, the associations being dependent on a configuration of the machine;

starting execution of the first module of the plurality of firmware modules in response to the call;

determining which module of the set of modules is associated with the call; and

starting execution of the module associated with the call.

24. (Original) The machine readable medium of claim 23, further comprising instructions that when executed by the machine cause the machine to perform an operation of returning to the calling agent when execution of the module associated with the call is complete.

25. (Previously Presented) A system, comprising:

a plurality of hardware components;

a first memory device to store a BIOS, the BIOS including a plurality of firmware modules, the BIOS further including,

means for determining firmware resources required by each of the plurality of firmware modules to operate, the firmware resources required, if any, for a given firmware module provided by one or more other firmware modules;

means for scheduling execution of modules of the plurality of firmware modules;

means for dispatching scheduled modules for execution; and

a processor on which the firmware modules are executed, coupled to the plurality of hardware components and the first memory device.

26. (Previously Presented) The system of claim 25, wherein the BIOS further comprises means for initializing system memory of the system after the scheduled modules are dispatched.

27. (Previously Presented) The system of claim 25, wherein the BIOS further comprises means for calling a module of the plurality of firmware modules for execution during execution of another module of the plurality of firmware modules.

28. (Previously Presented) The system of claim 27, wherein the means for calling a module of the plurality of firmware modules further comprises:

means for saving a return address;

means for determining a physical address of the module;

means for executing an instruction stored at the physical address of the module; and

means for executing an instruction stored at the saved return address when the module execution is complete.

29. (Previously Presented) The system of claim 25, wherein a module of the plurality of firmware modules comprises:

a globally unique identifier (GUID) to identify the module;

a resource list to store information identifying resources needed by the module to operate;

an import table to store physical addresses of a set of modules of the plurality of firmware modules that the module may call during execution;

a service that when executed performs a predetermined function;

an export table to store a value corresponding to a physical address of the service; and

an interface operatively coupled to the GUID, resource list, the service, the import table, and the export table, wherein the interface is addressable by a calling agent via the GUID to provide the calling agent access to the resource list, the service, the import table, and the export table.

30. (Previously Presented) The system of claim 25, wherein the BIOS further comprises:

means for starting execution of a first module of the plurality of firmware modules;

means for determining whether the first module is a chainable with another module of the plurality of firmware modules;

means for determining whether a hardware component of the plurality of hardware components that is associated with the first module is present in the system if the first module is chainable;

means for completing execution of the first module if the hardware component associated with the first module is present in the system; and

means for starting execution of a second module of the plurality of firmware modules without completing execution of the first module if the hardware component associated with the first module is not present in the system.

31. (Previously Presented) The system of claim 30, wherein the BIOS further comprises:

means for determining whether a hardware component associated with the second module of the plurality of firmware modules is present in the system if the first module is chainable;

means for completing execution of the second module if the hardware component associated with the second module is present in the system;

means for determining whether a third module is chained to the second module if the hardware component associated with the second module is not present in the system; and

means for executing the third module of the plurality of firmware modules without completing execution of the second module if third module is chained to the second module.

32. (Original) The system of claim 31, wherein the means for completing execution of the second module further comprises means for returning to a calling agent that called the first module.

33. (Previously Presented) The system of claim 28, wherein the BIOS further comprises:

means for executing a call made by a calling agent to a first module of the plurality of firmware modules, wherein the call is one of a set of calls, each call of the set of calls being associated with a module of a set of modules of the plurality of firmware modules, the associations being dependent on a configuration of the system;

means for starting execution of the first module of the plurality of firmware modules in response to the call;

means for determining which module of the set of modules is associated with the call; and

means for starting execution of the module associated with the call.

34. (Previously Presented) A system, comprising:

a plurality of hardware components;

a first memory device to store a BIOS, the BIOS comprising:

a plurality of firmware modules, each module of the plurality of firmware modules to provide at least one service, at least two modules providing an inter-module interface to enable each of said at least two modules to call a service provided by another module;

a core operatively coupled to the plurality of firmware modules, wherein the core, upon operation, selects for execution a set of modules from the plurality of firmware modules to be executed in a pre-memory execution environment prior to the initialization and availability of system memory;

a processor coupled to the plurality of hardware components and the first memory device.

35. (Previously Presented) The system of claim 34, wherein during execution of a first module of the plurality of firmware modules, the first module to selectively call a second module of the plurality of firmware modules for execution.

36. (Original) The system of claim 35, wherein the first module comprises an import table to store a physical address of the second module, the first module further to store a return address in a register of the processor in calling the second module.

37. (Previously Presented) The system of claim 34, wherein a module of the plurality of firmware modules comprises:

a globally unique identifier (GUID) to identify the module;

a resource list to store information identifying resources needed by the module to operate;

an import table to store physical addresses of a set of modules of the plurality of firmware modules that the module may call during execution;

a service that when executed performs a predetermined function;

an export table to store a value corresponding to a physical address of the service; and

an interface operatively coupled to the GUID, resource list, the service, the import table, and the export table, wherein the interface is addressable by a calling

agent via the GUID to provide the calling agent access to the resource list, the service, the import table, and the export table.

38. (Previously Presented) The system of claim 34, wherein a set of modules of the plurality of modules have identical global unique identifiers (GUIDs).

39. (Original) The system of claim 38, wherein during execution of a first module of the set of modules, the processor to complete execution of the first module when a first hardware component is associated with the first module is present in the system, the first hardware component being one of the plurality of hardware components.

40. (Original) The system of claim 39, wherein the first module to call a second module of the set of modules when the first hardware component is not present in the system.

41. (Previously Presented) The system of claim 34, wherein during execution of a first module of the plurality of firmware modules, the first module to call a second module of the plurality of firmware modules to perform a service, the second module to call a third module as a function of a configuration of the system, the third module being one of a set of modules of the plurality of firmware modules each being associated with a different hardware component of the plurality of hardware components that provide the service called by the first module.